

Title (en)

Spacecraft and appendage stepping methods that improve spacecraft attitude pointing and cancel solar array slew disturbances

Title (de)

Raumfahrzeug und Schrittorientierungsverfahren für Ansatzteile um eine verbesserte Lageregelung des Raumfahrzeuges und den Ausgleich der Schwenkstörungen der Solarpaneele zu erreichen

Title (fr)

Engin spatial et méthodes d'orientation d'appendices pour un meilleur pointage de l'engin et compensation des perturbations de balayage des panneaux solaires

Publication

EP 1103464 A2 20010530 (EN)

Application

EP 00309797 A 20001106

Priority

US 44940499 A 19991126

Abstract (en)

A spacecraft (10) having a body (11), one or more appendages (12,13) coupled thereto, and a controller that implements methods that rotate the one or more flexible appendages to point it (them) towards the Sun to reduce spacecraft attitude pointing disturbances and improves spacecraft attitude pointing. The steps of the one or more appendages are timed to deadbeat the disturbance imparted to the spacecraft body. Timing of the appendage steps may be such that the periodic disturbances are phased to substantially cancel each other, or phased to decrease the magnitude of the net disturbance. The present invention also cancels solar array slew disturbances. The present invention cancels predictable disturbance torques before they produce a pointing error, improving the spacecraft pointing performance. The present invention predicts a disturbance torque exerted on the body due to the controller moving the one or more appendages, calculates a feedforward torque necessary for the controller to cancel the disturbance torque and includes the feedforward torque in the calculation of the total control torque applied to the body. <IMAGE>

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IPC 8 full level

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CPC (source: EP US)

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Citation (applicant)

US 4843294 A 19890627 - BHAT MAHABALESHWAR K P [US], et al

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